REMARKS

By this Response, Applicants have canceled claim 50 without prejudice or disclaimer, and amended claims 48 and 62. No new matter has been added. Claims 48-94 are present in the application. Of those claims, claims 67-94 have been withdrawn from consideration on the merits as being directed to non-elected subject matter. Thus, claims 48, 49, and 51-66 are pending on the merits.

As an initial matter, Applicants appreciate the Examiner's reconsideration and withdrawal of the objections to the specification and drawings included in the Office Action issued November 7, 2008. In addition, Applicants appreciate the Examiner's continued indication that claims 60 and 61 contain allowable subject matter. See Final Office Action at 6. Applicants respectfully decline, however, to rewrite those claims in independent form at the present time because Applicants believe that claim 48, from which those claims depend, is allowable in its present form for at least the reasons outlined in more detail herein.

I. Claim Rejection under 35 U.S.C. § 103(a) based on Wilson and Frey

In the final Office Action, claims 48-59 and 62-66 were rejected under 35 U.S.C. § 103(a) based on U.S. Pat. App. Pub. No. US 2003/0058118 to Wilson ("Wilson") in combination with U.S. Patent No. 5,749,984 to Frey et al. ("Frey"). Final Office Action at 3. Claims 48 and 62 are the only independent claims included in this claim rejection. Although Applicants continue to believe that this claim rejection is improper for at least the reasons outlined in Applicants' Amendment filed February 4, 2009, as supplemented herein, Applicants have amended independent claims 48 and 62 to

incorporate subject matter previously recited in claim 50 into independent claims 48 and 62, to *further* distinguish them from Wilson and Frey in an effort to promote an expedited issuance of a Notice of Allowance for the present application. Applicants respectfully submit that independent claims 48 and 62 are patentably distinguishable from Wilson and Frey, regardless of whether those references are viewed individually or as a whole, for at least the reasons outlined in more detail herein.

A. Independent Claim 48

Applicants' independent claim 48 is directed to a method for determining a load exerted on a tyre, the method including, *inter alia*, "acquiring a first signal comprising a first signal portion representative of a radial deformation; measuring an *amplitude* of the radial deformation in the first signal portion; . . . and deriving the load exerted on the tyre from the *amplitude*, [a] rotation speed, and [an] inflation pressure; . . . wherein measuring the *amplitude* of the radial deformation comprises measuring a difference between: a maximum value of the first signal in the first signal portion, and a minimum value of the first signal in the first signal portion." (Emphasis added). Neither Wilson nor Frey discloses at least this subject matter recited in independent claim 48, and thus, this subject matter is not *prima facie* obvious based on those references.

The rejection statement asserts that "Wilson . . . teaches measuring an amplitude of the radial deformation in the first signal portion [of a signal representative of radial deformation] (see figure 5, peak to peak acceleration is representative of amplitude of the radial deformation) . . . ." Final Office Action at 3. The rejection statement further

asserts that Wilson discloses "deriving the load exerted on the tire from the amplitude (see abstract)." Id.

Applicants respectfully submit that the rejection statement has misinterpreted what Wilson discloses. Simply stated, Wilson does not disclose measuring an *amplitude* of a first signal portion representative of a radial deformation and deriving the load exerted on the tire from the *amplitude*. Rather, Wilson discloses merely detecting deflection points of signals representative of acceleration of the rotating tire, and determining elapsed time between the deflection points to determine deformation of the tire. Wilson does not disclose, however, "measuring an *amplitude* of [a] radial deformation in the first signal portion; . . . and deriving the load exerted on the tyre from the *amplitude*" (emphasis added), as recited in Applicants' independent claim 48.

Referring first to Wilson's Abstract, it discloses, in pertinent part,

> The tire deflection region or contact region of the loaded tire is detected by sensing the acceleration of the rotating tire by means of an accelerometer mounted on the tire, preferably on an inner surface such as the tread lining thereof. As the tire rotates and the accelerometer is off of the contact region, a high centrifugal acceleration is sensed. Conversely, when the accelerometer is on the contact region and not rotating, a low acceleration is sensed. The deflection points delimiting the contact region are determined at the points where the sensed acceleration transitions between the high and low values.

Wilson, Abstract. There is no disclosure in Wilson's Abstract that supports the rejection statement's assertion that Wilson discloses measuring an amplitude of a radial deformation in a first signal portion. Nor does Wilson's Abstract support the rejection statement's assertion that Wilson discloses deriving the load exerted on the tire from the amplitude of a radial deformation in a first signal portion.

Turning to Wilson's Fig. 5 and related disclosure, Wilson discloses that "Fig. 5 is a graphical representation of the general shape of an acceleration vs. time output signal generated by an accelerometer mounted on a vehicle tire in accordance with the present invention." Wilson at p. 4, ¶ [0037]. Wilson's disclosed system includes "a contact region detector 50 and an associated receiver-transmitter 52 within each tire 36 . . . ; and a receiver 56, [and a] data processor 58 . . . ." Id. at p. 5, [0064]. According to Wilson, "the contact region detector 50 functions to detect tire load-induced deflections, to time the load-induced tire deflection duration and periodicity . . . ." Id. at p. 5, ¶ [0065]. However, rather than disclosing a system that measures an *amplitude* of the signal received from the contact region detector 50, Wilson discloses that "[t]he receiver-transmitter 52 serves to receive the *timing information* from the contact detector 50, measure tire pressure and temperature, and transmit these data to the vehicle receiver 56." Id. (emphasis added). Thus, Wilson is not concerned with measuring the amplitude of a signal from the contact region detector 50. Rather, Wilson is only concerned with timing information associated with the signal from its contact region detector 50. As explained in more detail herein, Wilson is not concerned with measuring the amplitude of the signal because the principle of operation of Wilson's system relies on *timing* of signal deflections rather than the *amplitude* of the signal.

As explained by Wilson, "the approach taken to the detection of the deflection region of a loaded tire is to sense the acceleration of the rotating tire by means of an accelerometer mounted on the tire, preferably within the tire and more preferably on the inner tread lining of the tire." Id. at p. 5, ¶ [0067]. According to Wilson, "[a]s the tire rotates and the accelerometer is off of the deflection, a high centrifugal acceleration is

sensed." Id. In contrast, "when the accelerometer is on the flat deflection region and not rotating, a low acceleration is sensed." Id. Wilson discloses that "[t]he deflection points are determined at the points where the acceleration transitions between the high and low values." Id.

With reference to Fig. 5, Wilson explains that Fig. 5 is "[a]n illustration of the general shape of the accelerometer signal . . . , where the 1-g signal during motion along the flat contact region 40 has shoulders 100 on both ends that are caused by the motion of the radial accelerometer 92 toward the wheel center at each deflection point 88 and 90." Id. at 5, ¶ [0070]. Thus, although Fig. 5 shows a shape of the accelerometer signal from Wilson's contact region detector 50, Wilson does not disclose "measuring the amplitude" of the profile defined by the shape. Nor does Wilson disclose deriving a load on the tire from the amplitude. Rather, Wilson is merely interested in determining the timing between deflections in the shape.

In contrast to Applicants' claimed method, which measures amplitude of a radial deformation in a signal, and derives the load exerted on a tire from the amplitude, Wilson discloses determining load based on tread width and contact length of the area of applied pressure between the tire and the surface on which the tire is rolling. Wilson at p. 12, ¶ [0178]. Wilson discloses determining the contact length by determining the length of a chord of a circle defined by two deflection points at either end of the portion of the tire deformed along the point of contact with the surface on which the tire is rolling. Wilson at p. 11, ¶¶ [0161]-[0164]. Wilson does not disclose, however, that the chord length is determined based on measuring an amplitude of radial deformation of the tire. Rather, the cord length is determined based on the geometry of the

un-deformed tire, the rotation rate of the tire, and the time measured between deflections of the tire as it rotates. Id.

In particular, Wilson discloses that:

> the tire load is related to the tire pressure, tread width, and tire-road contact length as
>
> *load* = *α* x *treadWidth* x *contactLength* x *pressure* + *forceSidewall*
>
> . . .
>
> where *treadWidth* is the width of the tread, *treadWidth* x *contactLength* is the area of applied pressure, [and] *forceSidewall* is the effective resiliency of the tire sidewall to collapse . . . .

Id. at p. 12, ¶¶ [0178]-[0179]. Thus, rather than deriving the load exerted on a tire from the amplitude of a radial deformation, Wilson discloses determining load based on tread width and contact length of the area of applied pressure between the tire and the surface on which the tire is rolling. Further, Wilson discloses determining the contact length by determining the length of a chord of a circle defined by two deflection points at either end of the portion of the tire deformed along the point of contact with the surface on which the tire is rolling. Id. at p. 11, ¶¶ [0161]-[0164].

Moreover, contrary to the rejection statement's assertion, Wilson does not disclose measuring an amplitude of a first signal portion representative of a radial deformation and deriving the load on the tire based on the amplitude, wherein measuring the amplitude of the radial deformation comprises measuring a difference between: a maximum value of the first signal in the first signal portion, and a minimum value of the first signal in the first signal portion, as recited in independent claim 48.

The rejection statement refers to Fig. 5 of Wilson and asserts that "the peak to peak acceleration is a measurement of the maximum value of the first signal portion and the minimum value of the first signal in the first signal portion." Final Office Action at 4.

Applicants respectfully submit that the rejection statement has misinterpreted Wilson's teachings related to Fig. 5 at least because Wilson does not include any disclosure to support the assertion that Fig. 5 and related disclosure results in disclosing or suggesting "measuring the amplitude" shown in the graph in Fig. 5, or "deriving load on the tyre from the amplitude." As outlined above, Wilson does not disclose deriving load based on a deflection amplitude. Thus, there is no reason for Wilson to measure the amplitude when determining the load on the tire.

For at least the above-outlined reasons, Wilson discloses determining the load on a tire based on tire pressure, tread width, and tire-road contact length rather than disclosing a method including "deriving the load exerted on [a] tyre from the amplitude [of the radial deformation in a first signal portion representative of a radial deformation of the tyre]," as recited in Applicants' independent claim 48.

As noted in Applicants' originally-filed specification, the method disclosed in Wilson may suffer from a number of potential drawbacks. First, the complexity of the system required for Wilson's disclosed method may render it economically and/or technically unfeasible. See Applicants' Specification at p. 4, lines 1-8. Further, Wilson's disclosed method relies on an approximation of the area of contact between the tire and the surface on which it rolls. In particular, the area of contact is approximated by the tread width multiplied by the contact length, which results in a rectangular area. In reality, the contact area is not rectangular. Thus, Wilson's approximation may yield

inaccuracies in the load calculation. In addition, Wilson's method of determining load includes the addition of the effective resiliency of the tire sidewall to collapse (*forceSidewall*), which may be difficult to accurately determine, thereby adding to the potential inherent inaccuracy associated with Wilson's disclosed method of determining load on a tire.

Frey fails to overcome the above-noted deficiencies of Wilson. Frey discloses a system for monitoring and measuring the amount of deflection of a tire via a ratio of the time in which a sensor spends inside a contact patch of the tire to the time in which the sensor spends outside the contact patch of the tire. (Abstract.) Thus, similar to Wilson, Frey fails to disclose deriving the load exerted on a tire from the amplitude of radial deformation of the tire.

For at least the above-outlined reasons, Wilson and Frey, regardless of whether they are viewed individually or as a whole, fail to disclose or render obvious all of the subject matter recited in Applicants' independent claim 48. As a result, independent claim 48 is not *prima facie* obvious based on those references. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of independent claim 48 under 35 U.S.C. § 103(a) based on Wilson and Frey.

B. Independent Claim 62

Applicants' independent claim 62 is directed to a method of controlling a vehicle, the method including, *inter alia*, "determining a load exerted on . . . at least one tyre . . . , wherein the load exerted on the at least one tyre is determined by a method comprising: acquiring a first signal comprising a first signal portion representative of a radial

deformation; measuring an amplitude of the radial deformation in the first signal portion; . . . and deriving the load exerted on the tyre from the amplitude, [a] rotation speed, and [an] inflation pressure . . . ." Applicants' independent claim 62 further recites that "measuring the amplitude of the radial deformation comprises measuring a difference between: a maximum value of the first signal in the first signal portion, and a minimum value of the first signal in the first signal portion." For reasons at least similar to those outlined above with respect to independent claim 48, Wilson and Frey, regardless of whether they are viewed individually or as a whole, fail to disclose or render obvious at least this subject matter recited in independent claim 62. Thus, independent claim 62 is not *prima facie* obvious based on those references, and Applicants respectfully request reconsideration and withdrawal of the rejection of independent claim 62 under 35 U.S.C. § 103(a) based on Wilson and Frey.

C. Dependent Claims 49-59 and 63-66

Each of claims 49-59 and 63-66 depends from a respective one of independent claims 48 and 62. Thus, dependent claims 49-59 and 63-66 should be allowable for at least the same reasons as independent claims 48 and 62. Therefore, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 49-59 and 63-66 under § 103(a) based on Wilson and Frey.

II. Conclusion

For at least the above-outlined reasons, Applicants' claims 48, 49, 51-59 and 62-66 should be allowable. Further, the Examiner indicated that claims 60 and 61

contain allowable subject matter. See Office Action at 8. Thus, all of claims 48, 49, and 51-66 should be allowable. Accordingly, Applicants respectfully request reconsideration of this application, reconsideration and withdrawal of the claim rejection, and allowance of claims 48, 49, and 51-66.

If the Examiner believes that a telephone conversation might advance prosecution of this application, the Examiner is cordially invited to call Applicants' undersigned attorney at (404) 653-6559.

Applicants respectfully submit that the final Office Action contains a number of assertions concerning the related art and the claims of the present application. Regardless of whether any of those assertions are addressed specifically herein, Applicants respectfully decline to automatically subscribe to them.

Please grant any extensions of time required to enter this Response and charge any additional required fees to our Deposit Account 06-0916.

Respectfully submitted,

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